Ichthyological notes – *Notes ichtyologiques*

Comments on a finding of *Mobula mobular* (Mobulidae) in the Adriatic Sea

by

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RÉSUMÉ. - Commentaires sur la découverte de *Mobula mobular* (Mobulidae) en Adriatique.

Une publication récente a décrit la capture d'un spécimen de *Mobula mobular* en mer Adriatique, comme étant le premier signalement documenté de cette espèce pour cette mer (Scacco *et al*., 2009). Cependant, la présence de *M. mobular* en mer Adriatique est bien connue depuis plus d'un siècle. Une liste des nombreux signalements et captures de ce chondrichthyen en mer Adriatique est présentée.

Key words. - Mobulidae - *Mobula mobular* - Adriatic Sea - Records.

The biodiversity issue has met, in the last decades, the general awareness of the scientific community, including marine scientists (e.g. Heip *et al*., 1998). This is also witnessed by the foundation of a number of *ad hoc* journals dedicated, fully or partly, to biodiversity and biogeographical records in the marine realm, e.g. *Marine Biodiversity* and *Marine Biodiversity Records*. As for the Mediterranean Sea, the matter of biodiversity is quite compelling because this basin has been and is still the theatre of many bioinvasions (Quignard and Tomasini, 2000; Galil, 2007). The awareness of the Mediterranean biodiversity and its modifications has promoted, among other actions, the production of species catalogues, such as the "Checklist of the Flora and Fauna in Italian Seas" (Relini, 2008, 2010) or monographs such as the "Checklist of the Adriatic Sea Fishes" (Lipej and Dulčić, 2010).

The present paper deals with the presence of the devil ray *Mobula mobular* (Bonnaterre, 1788) (Chondrichthyes: Mobulidae) in the Adriatic Sea and was prompted by the recent publication of Scacco *et al*. (2009). The authors report the capture of a *M. mobular* in the central Adriatic Sea and present a photograph of the animal. They state that "The present record represents the first documented occurrence of the giant devil ray for the Adriatic Sea, updating the geographical distribution of this species in the Mediterranean." However, a number of checklists, catalogues, identification handbooks, as well as regular scientific papers (referenced in the Results section), have documented the presence of *M. mobular* in the Adriatic Sea over the years, since 1872. On this regard, it must be noted that *M. mobular* is the only species of the genus living in the Mediterranean Sea (Serena, 2005) – it is probably an endemic species in this sea (Notarbartolo di Sciara and Bianchi, 1998) – and, because of its shape and size, its identification is unmistakable.

The aim of this note is to show that the presence of *M. mobular* in the Adriatic Sea has been repeatedly documented since more than a century.

MATERIAL AND METHODS

The literature on Mediterranean and Adriatic chondrichthyans was compiled for reports on the occurrence of *Mobula mobular* in the Adriatic geographical district, i.e. previous faunistic surveys, survey of the main scientific journals, including the grey-literature, dealing with the Adriatic geographic area and new records and evidence of fish species by checking the recent ichthyological scientific literature.

RESULTS AND DISCUSSION

To the best of our knowledge, the oldest Adriatic record of *Mobula mobular* is reported by Canestrini (1872: 61) as *Cephaloptera giorna* Risso, a synonym of *M. mobular* (*cfr*. Krefft and Stehmann, 1979): "nell'Adriatico deve dirsi rarissima" [it is very rare in the Adriatic Sea]. Afterwards, Stossich (1880) also stated that *Cephaloptera giorna* enters the Adriatic Sea just accidentally. Faber (1883) reported *Dicerobatis giornae* Lacepède, another synonym of *M. mobular* (*cf*. Krefft and Stehmann, 1979), in this sea and mentioned a specimen of the species from Trieste.

Scientific reports from the last fifty years focusing on the Adriatic fauna are listed in table I. The list also includes occurrences of *M. mobular* both recorded in the scientific literature and published in the web. A popular book, however scientifically correct, may also be cited; it deals with the fisheries of Bari (Italy, south-western Adriatic Sea), correctly describes the species and states that it is fished, though infrequently, by trawl net and bottom longline (Scorcia, 1974). In addition several general (i.e. Mediterranean or Atlanto-Mediterranean) reference books and catalogues also indicate that *M. mobular* distribution includes the Adriatic Sea: Tortonese (1956), Bini (1967), McEachran and Capapé (1984), Bauchot (1987), Amori *et al*. (1993), Notarbartolo di Sciara and Bianchi (1998), Serena (2005), Notarbartolo di Sciara *et al*. (2006), and Vacchi and Serena (2010). The internet resources 'Catalog of Fishes' and 'FishBase' were also checked for any recent supplementary information on the Adriatic presence of the devil ray.

The references herein listed clearly show that the record of *M. mobular* in the Adriatic Sea reported by Scacco *et al*. (2009) is not the "first documented occurrence" for this sea, as its presence in this basin is well established since more than a century. Moreover, several records of *M. mobular*, such as some specimens caught in the southern part of the Adriatic sea in the last 10 years (Bello, 1999) and observed by one of us (G.B.), have not been reported in scientific papers because of the well established presence of the species in the Adriatic Sea.

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Table I. - List of *Mobula mobular* reports and records in the Adriatic Sea from the last fifty years. (*) indicates a general statement of the presence in the Adriatic Sea; NA = North Adriatic, MA = Middle Adriatic, SA = South Adriatic.

Date	Locality	Area	Number of specimens	Total length (meter)	Disk width (meter)	Weight (kg) [estimated]	Notes	Source
*	*	Adriatic	*					Šoljan (1975)
*	*	Adriatic	*	-	-	-		Jardas (1984a)
*	*	Adriatic	*	-	-	-		Jardas (1984b)
*	*	Adriatic	*	-	-	-		Jardas (1985)
1984	-	SA	2	-	-	272 (sum of the two specimens)	caught by longline for swordfish	Marano *et al.* (1988)
1993	Vis harbour Vis Island	SA	1	?	?	[> 100]		Jardas (1996)
-	-	SA	several	-	-	-	adults and subadults	Bello (1999)
1998	Cape Torej, Cres Island	NA	2	[> 5]; 3.5	-	[1500-2000]; [400-500]		Dulčić and Lipej (2002)
Aug. 2002	Senj, Kvarner Gulf	NA	1	1.5	1.8	60	caught by fishermen	Kovačić (pers. com. to Lipej)
Sep. 2002	Omišalj, Island of Krk	NA	1	1.7 (disk length)	3.0	[200]	caught by fishermen	Novi list (2002)
2006	Molunat, Konavlje (Dubrovnik)	SA	1	-	-	200		Tutman (pers. com. to Dulčić)
Apr. 2008	43°16'978"N 14°29'197"E	MA	1	-	3.0	100	♂; released	Scacco *et al.* (2009)
Aug. 2009	off Pescara, on the border of the Pomo / Jabuka Pit	MA	2	-	-	-	sighting	Marevivo (2009)

In addition to the herein cited literature, the recent findings (2008-2009) of 10 individuals in the middle Adriatic Sea (D. Holcer and B. Lazar, pers. obs., in Plavi Svijet / Blue World Institute, 2010) show that indeed this mobulid species is not rare in this marine district. Incidentally the locations of the latter observations, i.e. close to island coasts as well as other sightings and catches (Tab. I), are in agreement with the species neritic habitat reported by McEachran and Séret (1990: 210): "semipelagic to pelagic, over continental shelves and also near oceanic islands."

The paper by Scacco *et al.* (2009) is well-prepared. It gives the geographic coordinates and a map with the catch localization of the *M. mobular* specimen, its main morphometric features (weight and several linear measurements) and in addition its sex and provides a good colour photograph. No museum deposit of course, since the devil ray was set free after its examination and measurement, a commendable conduct when considering that the species is highly vulnerable (Notarbartolo di Sciara *et al.*, 2006). However, this paper failed to recognize that this chondrichthyan species had been repeatedly recorded in the Adriatic Sea since 1872. Scacco *et al.* (2009) cite just one paper among the many dealing with *M. mobular* occurrences in the Adriatic Sea, i.e. Jardas (1996), and state that "Despite the fact that Jardas (1996) included *M. mobular* in his Croatian fish faunistic list, documented records of this species are lacking in the Adriatic Sea. Therefore, the present occurrence is the first documented record of the giant devil ray from the Adriatic Sea." In our opinion such a statement is devoid of any foundation because: 1) Jardas, an experienced ichthyologist who assembled his list based on documented records, refers to previous literature that Scacco *et al.* (2009) evidently did not check; 2) all the earlier Adriatic records regularly published in established and available scientific journals and summarized in widely distributed reference books and checklists (see their list in Results), were also ignored by Scacco *et al.* (2009). On this respect we would like to remind that the authors of reference handbooks and checklists use to revise critically, the records in preceding sources; see for instance the many notes in Šoljan (1975).

Incidentally one wonders on the meaning of "documented records": should we judge an occurrence documented only when it is supported by a photograph (in modern times) or by a museum kept specimen (for old times) and disproves all the scientific reports devoid of such support? In this way most long-term established information would become ineffective if the starting line for biogeographic reports were set just at the present, which is indeed unthinkable. Moreover forged information might be constructed anyway by using actual photographs of geographically misplaced animals. On the other hand cases of mislabelled, locality-wise, collection specimens are well known (Lipej and Dulčić, 2010).

In our opinion, the emendation of the erroneous information by Scacco *et al.* (2009) is necessary in order to avoid the fixation of such an error. Indeed this case, beyond its own peculiarity, brings up the general issue of accuracy in producing faunal lists and in recording species range expansions, whether they concern Mediterranean indigenous or bioinvading species. This issue is dealt with elsewhere (Bello *et al.*, in prep.).

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